

REMARKS

Favorable reconsideration of the present application is respectfully requested.

New dependent claim 36 has been introduced. Basis for Claim 36 can be found at elements 8 and 13 in the specification. Claim 31 now depends from Claim 25. Claims 24, 32 and 34 have been amended to recite that the supply of molten metal to the hopper is such that the surface height of the molten metal is lower than a shaft seal of an extrusion screw. Basis for this can be found in the description on lines 8-11 of page 21 of the specification. This has the advantage of minimized damage to the shaft seal due to the heat of the molten material (page 21, lines 16-22). Claims 25 and 28 no longer recite the level sensor or control device, but are nonetheless believed to be patentable for the reasons noted below. Claims 3, 4, 6-18 and 20-36 are active in the application.

Claims 3, 4, 7-9, 16, 17, 21-23, 24 and 25-35 were rejected under 35 U.S.C. § 103 as being obvious over JP 01166874 in view of the U.S. patents to Wang '266, Kono '372 and Kono '196, and further in view of JP 1-92447.

Applicants wish to thank Examiner Tran for the courtesy of an interview on January 21, 2004, at which time this rejection was discussed with respect to possible amendments to the claims. Specifically, Applicants explained that the height of the molten metal in the hopper must be controlled so as not to damage the shaft seal of the extrusion screw in the chamber. Therefore, a level sensor controls the level of the molten material in the hopper 6 located at the upper end of the chamber 2.

Claims 24, 32 and 34 therefore now recite that the surface height of the molten metal is controlled to be lower than a shaft seal of the extrusion screw. There is no description in JP '447 that the surface height of molten metal is controlled to be lower than a shaft seal of an extrusion screw. In Kono '196, moreover, granular raw material supplied from above is melted in the hopper itself. No combination of these references teaches or suggests an

injection molding apparatus in which the surface height of the molten metal is controlled to be lower than a shaft seal of an extrusion screw. It is therefore respectfully submitted that the amended claims 24, 32 and 34, which further recite this feature, clearly define over the cited prior art.

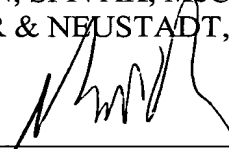
Concerning Claim 31, moreover, as was discussed during the interview this claim recited that the nozzle connected at the discharge end of a second internal channel, which is a horizontally extending channel connected to a vertical channel in a connection member, has a nozzle discharge port opening/closing means for opening or closing a discharge port of the nozzle. As was discussed during the interview, and in the prior response filed on July 31, 2003, the valve 60 of Kono '372, which was relied upon as the "nozzle discharge port opening/closing means," does not open or close a discharge port of a nozzle connected at the discharge end of a horizontal channel, but is instead provided at the joint between the horizontal and a "vertical" channel. It was therefore agreed that Claim 31 also defines over the cited prior art due to the recitation of this feature, as do Claims 25 and 28 which also recite the nozzle discharge port opening/closing means. The additional limitations in Claims 25 and 28 as to the level sensor and control device are therefore unnecessary and have been deleted.

Concerning paragraphs 4 and 5 of the outstanding Office Action, it is noted that the additionally cited references to Rock and Mercer were applied to disclose features of the dependent claims, and provide no teachings for overcoming the shortcomings of the primary references with respect to the independent claims.

Applicants therefore believe that the present application is in a condition for allowance and respectfully solicit an early Notice of Allowability.

Respectfully submitted,

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